

shielding film shielding a light incident on the active layer, and a second light-shielding film between the active layer and the first light-shielding film, wherein a carrier concentration of at least surface portion of the second light-shielding film which opposes to the active layer is about $10^{17}/\text{cm}^3$ or less.

[11] According to a second embodiment of the present invention, a thin film transistor comprises an active layer, in which a source region and drain region are formed, a first light-shielding film shielding a light incident on the active layer, and a second light-shielding film between the active layer and the first light-shielding film, wherein an electric field intensity of a surface portion of the second light-shielding film which opposes the active layer includes about 80% or less of that of the surface portion which opposes the first light-shielding film.

[12] According to a third aspect of the present invention, a thin film transistor substrate comprises a light transmitting substrate, a transistor array including a plurality of thin film transistors disposed on the light transmitting substrate, a first light-shielding film disposed between the light transmission substrate and at least one of the thin film transistors, and a second light-shielding film between the first light-shielding film and an active layer of the thin film transistor, wherein a carrier concentration of a surface portion of the second light-shielding film which opposes the active layer is about $10^{17}/\text{cm}^3$ or less.

BRIEF DESCRIPTION OF THE DRAWINGS

[13] Fig. 1 is a cross-sectional view showing a cross-sectional structure of the thin film transistor array substrate in a conventional liquid crystal display unit.

[14] Fig. 2 is a plan view showing the vicinity of a thin film transistor of a thin film transistor array substrate according to a first embodiment of the present invention.

[15] Fig. 3 is a cross-sectional view showing a cross-section taken on line A-A' of Fig. 2.

[16] Figs. 4(a) to ⁴(d) are cross-sectional views showing a method for the thin film transistor array substrate according to the first embodiment of the present invention.

- [17] Figs. 5(a) and ⁵(b) are cross-sectional views showing a method for the thin film transistor array substrate subsequent to Fig. 4(d).
- [18] Figs. 6(a) and ⁶(b) are cross-sectional views showing a method for thin film transistor array substrate subsequent to Fig. 5(b).
- [19] Figs. 7(a) and ⁷(b) are energy band views showing the vicinity of the active layer from the light-shielding film respectively.
- [20] Fig. 8 is a graph showing relationship between a carrier concentration of the light-shielding film and an amount of change in potential in the light-shielding film.
- [21] Fig. 9 is a cross-sectional view showing a cross-sectional structure of the thin film transistor array substrate according to a second embodiment of the present invention.
- [22] Figs. 10(a) and ¹⁰(b) are cross-sectional views showing a method for the thin film transistor array substrate according to the second embodiment of the present invention.
- [23] Fig. 11 is a cross-sectional view showing a cross-sectional structure of the thin film transistor array substrate according to a third embodiment of the present invention.
- [24] Fig. 12 is a cross-sectional view showing a cross-sectional structure of the thin film transistor array substrate according to a fourth embodiment of the present invention;
- [25] Fig. 13 is a cross-sectional view showing a cross-sectional structure of the thin film transistor array substrate according to a fifth embodiment of the present invention.
- [26] Fig. 14 is a cross-sectional view showing a cross-sectional structure of a liquid crystal display according to a sixth embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

- [27] Fig. 2 is a plan view showing a thin film transistor of a liquid crystal display unit according to a first embodiment of the present invention, and Fig. 3 is a cross-sectional view taken on line A-A' of Fig. 2. In Figs. 2 and 3, one of a plurality of thin film transistors to be contained in the TFT substrate 32 is shown.